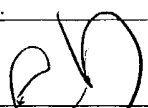


Notice of Allowability	Application No.	Applicant(s)	
	10/714,681	GROOTAERT ET AL.	
	Examiner	Art Unit	
Henry S. Hu	1713		

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to IDS of 4-2-2004.
2. ☒ The allowed claim(s) is/are 1-11.
3. ☐ The drawings filed on _____ are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|---|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____ |
| 3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date <u>2</u> pages | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____ |

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in two telephone interviews with **Brian E. Szymanski (tel. 651 737-9138) on July 8 and 9, 2004** to amend the following:

Claim

Claim 2 at line 1 replace the word of "polymerizingis" with "polymerizing is"

Specification

page 8 at line 31 replace the word of "50 C" with "50 °C"

page 9 at line 5 replace the word of "a,a'bis" with " α,α' -bis"

page 9 at lines 5-6 replace the word of "di [3-dimethyl-3-(-butyl)peroxy)- butyl] carbonate" with "di[1,3-dimethyl-3-(t-butylperoxy)-butyl]carbonate"

page 9 at lines 20-21 replace all three words of "EPA" with "EP"

DETAILED ACTION

2. The above examiner's amendment has corrected the improper language in specification and claims to use the right name for temperature and chemicals as well as European patents. With respect to the use of "**substantially amorphous**" in **Claim 8** at lines 1-2 which is questioned by the examiner in the interview, the Applicants have pointed out the support on page 6 at lines 29-30 as "the substantially amorphous fluoroelastomers show hardly any melting point if at all". **Claims 1-11 are pending now.** An action follows.

Allowable Subject Matter

3. Claims 1-11 allowed.

4. The following is an examiner's statement of reasons for allowance: The above claims are allowed over the closest references:

5. *The parent **Claim 1** of present invention relates to a process for **making a fluoropolymer having nitrile endgroups**, said process comprising a free radical polymerizing one or more fluorinated monomers in the presence of a nitrile group containing salt or a nitrile group containing pseudohalogen compound. Other parent **Claim 11** relates to a specific nitrile*

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group containing fluoroelastomer with formula of NCX-(R_f)-XCN, wherein X is O or S. See other limitations of dependent *Claims 2-10*.

6. In a close examination, parent **Claim 1** of present invention carries the specific “polymerization process” limitation of “polymerizing in the presence of a nitrile group containing salt or a nitrile group containing pseudohalogen compound” for making a **fluoropolymer having nitrile endgroups**. It should be noted that parent **Claim 11** only relates to a specific nitrile group containing fluoroelastomer having a formula of NCX-(R_f)-XCN.

As disclosed by the Applicants on pages 1-2 as well as on two IDS filed on 12-29-2003 and 10-20-2003, nitrile groups can be only incorporated onto polymers by three known synthetic methodologies in the art, for instance, (A) using nitrile group-containing monomer for copolymerization, (B) dehydrating amide in polymer's endgroups or pendant groups into nitrile, and (C) adding chain transfer agent of I-(CF₂)-CN in the course of polymerization. The examiner confirms the Applicants' **background disclosure** with the following examination in this regard.

7. Regarding methodology (A), **US Patent No. 5,677,389 to Logothetis et al.** and **US Patent No. 5,877,264 to Logothetis et al.**, both references disclose the preparation of nitrile group fluorocopolymers by using nitrile group-containing comonomers for copolymerization (see column 3, line 6 – column 4, line 20 for Logothetis (389); see column 3, line 44 – column 4, line 63 for Logothetis (264)). Although inorganic salts such as **ammonium thiocyanate** can be

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only added as a curing accelerator in the compounding process (see column 9, line 9-23 and column 14, line 13 for Logothetis (389); see column 8, line 35-42 for Logothetis (264)), **thiocyanate salt is not used in the course of polymerization at all.**

Regarding methodology (B), **EP Patent No. 1,211,265 A1 to Irie et al.** and **WO Patent No. 00/59959 to Irie et al.**, both references only disclose the preparation of nitrile group fluorocopolymers by **dehydrating amide in polymer's endgroups or pendant groups into nitrile** in the presence of a dehydrant such as COF_2 (see title and abstract for WO and EP patents).

Regarding methodology (C), **EP Patent No. 0,868,447 B1 to Hung et al.** only discloses the preparation of nitrile group fluorocopolymers by **adding chain transfer agent of fluorinated iodonitriles such as $\text{I}-(\text{CF}_2)_n-\text{CN}$ in the course of polymerization** (see title; paragraphs 0001, 0005, 0020, 0024-0028).

8. With respect to the specific fluoropolymer of parent **Claim 11**, it requires to have **-OCN or -SCN** as endgroups in fluoroelastomers, **US Patent No. 5,929,199 to Snow et al.** only disclose the preparation of a cyanate resin monomer of $\text{NCO}-\text{CH}_2-(\text{CF}_2)_n-\text{CH}_2-\text{OCN}$ and its cyclization to form a trimer ring (abstract, line 1-8; column 4, line 13-44). Although the claimed -OCN is on the endgroups of monomer as well as its polymer, it is noted by the examiner that **such a crosslinking mechanism will only produce a "thermosetting" polymer rather than an elastomer** (specifically see column 4, line 31-32).

9. In summary, the above-mentioned six references, in combination or alone, fail to teach or fairly suggest using the claimed polymerization **in the presence of a nitrile group containing salt or a nitrile group containing pseudohalogen compound**” for making a fluoropolymer having nitrile endgroups.

Additionally, the present invention has shown in examples along with some comparative examples for making the claimed nitrile group-containing fluoropolymer (see pages 11-12 for **examples 1-5** along with its **comparative example**). Therefore, all the above-mentioned references, in combination or alone, does not teach or fairly suggest the limitations of present invention.

10. The key issue, regarding making the claimed nitrile group-containing fluoropolymer by polymerizing **in the presence of a nitrile group containing salt or a nitrile group containing pseudohalogen compound**, cannot be overcome by any or the combination of the above references, therefore, the present invention is novel.

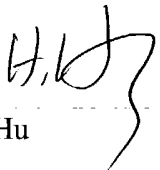
11. As of the date of this office action, the examiner has not located or identified any reference that can be used singularly or in combination with another reference including the above references to render the present invention anticipated or obvious to one of the ordinary skill in the art. Therefore, the two independent and parent **Claims 1 and 11** are allowed for the

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reason listed above. Since the prior art of record fails to teach the present invention, the remaining pending **Claims 2-10** are passed to issue.

12. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Henry S. Hu whose telephone number is **(571) 272-1103**. The examiner can be reached on Monday through Friday from 9:00 AM –5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on (571) 272-1114. The fax number for the organization where this application or proceeding is assigned is (703) 872-9306 for all regular communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Henry S. Hu

July 9, 2004


DAVID W. WU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700